9.1 ALTERNATIVE POST-INJECTION SITE CARE TIMEFRAME
40 CFR 146.93(a)

CLECO DIAMOND VAULT PROJECT

Facility Information

Facility name: DIAMOND VAULT

Facility contact: Sensitive, Confidential, or Privileged Information [redacted]

Well name: CLDV-IW2

Well location: RAPIDES PARISH, LOUISIANA

Sensitive, Confidential, or Privileged Information [redacted]

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9.1 Alternative Post-Injection Site Care and Site Closure (PISC) Plan

Cleco Power, LLC will conduct post-injection monitoring for a ten-year period following the cessation of injection operations. A justification for this alternative PISC timeframe is provided below.

9.1.1 Computational Modeling Results – 40 CFR 146.93(c)(1)(i)

Figure 9-2 in the PISC and Site Closure Plan (Permit Section 9) illustrates a map view of the predicted (combined from all injection wells) pressure front and CO_2 development after 4, 8 and 12 years of injection. Sensitive, Confidential, or Privileged Information [redacted]

9.1.2 Predicted Timeframe for Pressure Decline – 40 CFR 146.93(c)(1)(ii)

Figure 9-3 in the PISC and Site Closure Plan (Permit Section 9) shows the map view of the pressure front during the post injection phase. Additional plots and figures, showing the pressure front during the injection period, can be found in the AoR and Corrective Action Plan Section (Permit Section 2). The maximum spatial extent of the pressure front occurs at the end of the injection period. Figure 9-1 in the PISC and Site Closure Plan (Permit Section 9) shows the predicted pressure buildup and decline at the injection well through the injection phase and for 50 years of the post-injection period, pressure decline begins immediately following cessation of injection.

Continuous pressure measurements will be acquired from the injection formation through the injection and PISC phases of the project (Testing and Monitoring Plan, Permit Section 7). The pressure data obtained during the injection phase of the project will be used to update the computational modelling every six months as per the reporting requirements in 40 CFR 146.91. Pressure data acquired during the PISC phase of the project are expected to verify the rapid decline in pressure in the injection formation predicted by the computational modelling.

9.1.3 Predicted Rate of Plume Migration – 40 CFR 146.93(c)(1)(iii)

Figure 9-2 and Figure 9-3 in the PISC and Site Closure Plan (Permit Section 9) show that the pressure plume remains relatively stable from the beginning of injection through to the end, after 12 years of injection. After the end of the injection period the pressure plume reduces quickly to reach pre injection levels after year 5 of the PISC phase. Additional figures illustrating the predicted CO_2 plume expansion during the injection period are provided in the AoR and Corrective Action Plan Section (Permit Section 2). The combined pressure plume from all six planned injection wells was utilized to define the AoR.

9.1.4 Confining Zone Characterization – 40 CFR 146.93(c)(1)(vii)

The Cane River Formation is the primary confining unit for the project. The mineralogy, geomechanics, and capillary pressure within the Cane River formation will be assessed as part of the logging and testing program of the Stratigraphic Test Well (STW). Regional data is currently being used to characterize the Cane River as described in the AoR and Corrective Action Plan (Permit Section 2). The stratigraphic column showing the Cane River derived from the regional data is shown below in Figure 9-1.

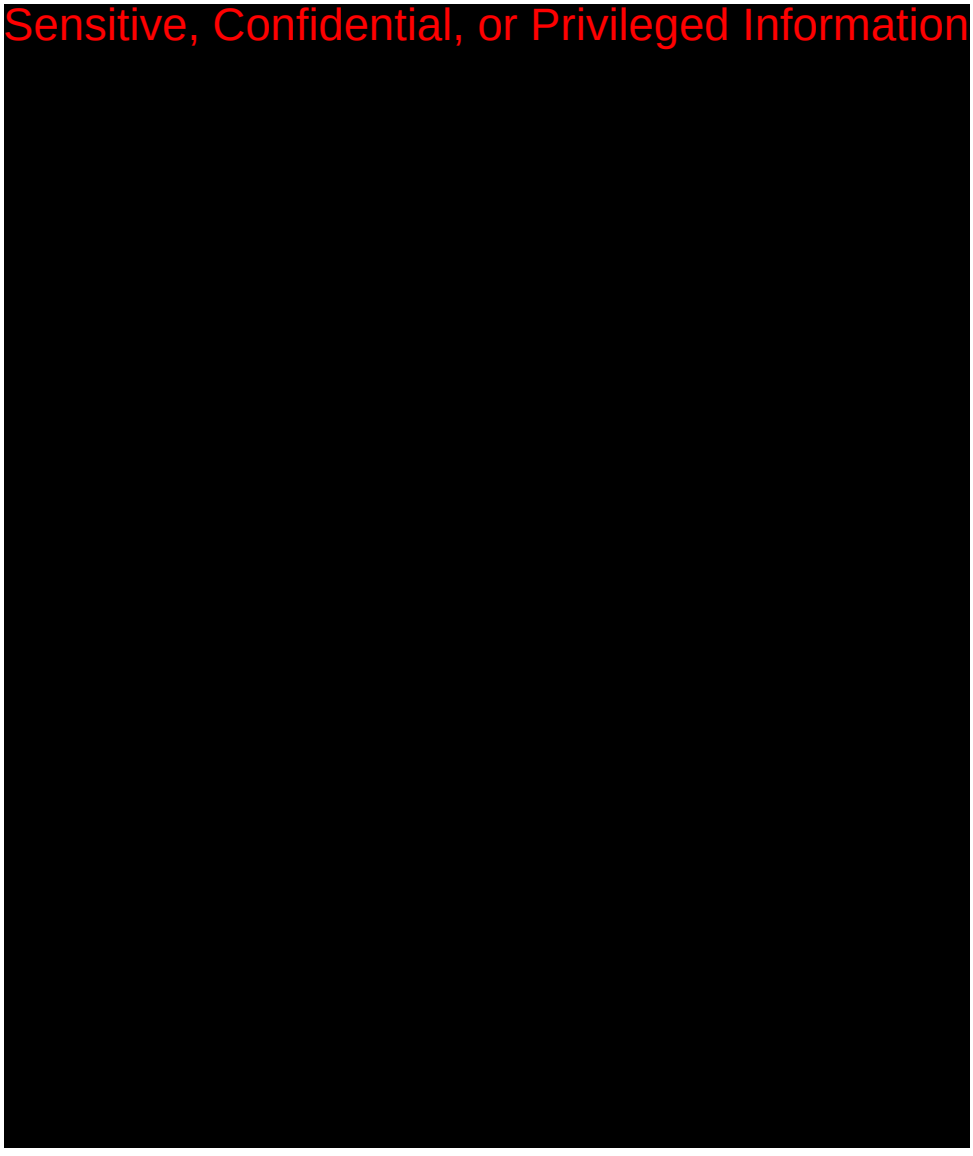

Figure 9-1 : Stratigraphic column showing confining zone (Cane River)

9.1.5 Assessment of Fluid Movement Potential – 40 CFR 146.93(c)(1)(viii)-(ix)

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The injection well will be constructed according to EPA Class VI regulations, and several measures will be incorporated in the well design to ensure protection of the USDWs at the site following the injection period (Injection Well Construction Plan, Permit Section 4). The long casing string and packer will be constructed of corrosion-resistant alloys (CR13) across the injection reservoir and confining zone to reduce the chances of casing degradation over the long term. Similarly, a CO_2-resistant cement will be pumped behind the deep string casing across the injection reservoir and confining zone. Following completion of the injection phase of the project and monitoring efforts, the injection well will be plugged and abandoned according to EPA Class VI guidelines, including the use of CO_2-resistant cement across the storage formation (Injection Well Plugging Plan, Permit Section 8).

During the injection and PISC phases of the project, the well integrity of the injection and deep monitoring wells will be monitored through several internal and external monitoring techniques (Section 9.3, Permit Section 7). Annular pressures and fluid volumes will be monitored in the injection well on a continuous basis until the well is abandoned. Annular pressures in the deep monitor wells will be monitored daily. Temperature logging using DTS is the primary external mechanical integrity test that will be used to monitor the injection and deep monitoring wells on an annual basis.

9.1.6 Location of USDWs – 40 CFR 146.93(c)(1)(x)

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